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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/851,943 | 05/10/2001 | Yasuyuki Mishima | HITA.0053 | 4052 |

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| EXAMINER |
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KOVALICK, VINCENT E

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2673

DATE MAILED: 02/19/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/851,943

Applicant(s)

MISHIMA ET AL.

Examiner

Vincent E Kovalick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to Applicant's Amendment dated December 10, 2003 in response to USPTO Office Action dated October 7, 2003.

The amendments to claims 1-17 have been noted and entered in the record.

Applicant's arguments filed December 10, 2003 have been fully considered but they are not persuasive.

- o Regarding Applicant's argument relative to claim 1 that Yamashita et al. '630 does not teach the display device being structured on a circuit board, the secondary reference Asada et al. '287 teaches a display device structured on a circuit board (col. 7, lines 8-23). Relative to Applicant's argument that "gate signal lines and drain signal lines being formed in a continuous area along a long side direction of the circuit board and being divided into plural lines along the long side direction" this limitation was introduced as part of the current amendment to claim 1 and is addressed in the action hereinbelow. Yamashita et al. further teaches the data bus lines, the output timing clock lines, the display data latching clock and the clock lines being connected to the display control device individually (col. 6, lines 16-65).

- o Relative to Applicant's argument indicating that lines col. 3, lines 28-67 and col. 4, lines 1-62 of '287 do not teach a circuit board that supplies the display data to "each of the driving circuits via a bus line and a clock line of the circuit board", this feature is taught in col. 7, lines 8-23 of '287 as indicated in item 3 of the said Office Action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1-2, 4-5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (USP 6,320,630) taken with Asada et al. (USP 5,963,287).

Relative to claim 1, Yamashita et al. **teaches** a display device having slim driver chip (col. 1, lines 46-67; lines 1-67 and col. 3, lines 1-62); Yamashita et al. further **teaches** a display device comprising a liquid crystal display element and a plural driving circuits (col. 5, lines 13-20); a display control device which transmits display data and a clock signal to the plurality driving circuits (col. 6, lines 18-24); further still, Yamashita et al. **teaches** at least one of the bus line and the clock signal line of the circuit board being formed in a continuous area along a long side direction of the circuit board and being divided into plural lines along the long side direction, and said divided plural lines are connected to the display control device individually (col. 6, lines 18-65 and Fig. 1).

Fig. 1 **teaches** the data bus lines (item 133) and associated clock lines (items 131 and 132) and the data gate driver control lines (142) and associated clock lines (item 141) all generated by the Display Control Device (item 110); in turn divided and distributed to drive the Drain Drivers (item 130) and Gate Drivers (item 140) respectively which then drive the plurality of Drain lines (item D) and Gate lines (item G) respectively. Applicant will note the similarity of the structure of the bus line divisions between said Fig. 1 of Yamashita et al. and Fig. 6 of the

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instant invention which Applicant identified as illustrating the division and distribution of said bus lines. It being understood that the placement of the of the bus line and the clock signal line could be located along a long side direction of the circuit board and being divided into plural lines along the long side direction; per case law (To shift location of parts; In re Japikse, 86 USPQ 70 (CCPA 1950).

Yamashita et al. **does not teach** a circuit board which is provided between the display control device and the plural driving circuits and supplies the display data and the clock signal transmitted from the display control device, to each of the driving circuits via a bus line and a clock line in the circuit board,

Yamashita et al. teaches a display device comprising a display control device which generates the display data and clock signals and associated control signals to facilitate displaying image transmitted to the display control derive from a video signal source.

Asada et al. **teaches** a Display Unit with Flexible Printed Circuit Board (col. 3, lines 28-67 and col. 4, lines 1-62); Asada et al. further **teaches** a circuit board which is provided between the display control device and the plural driving circuits and supplies the display data and the clock signal transmitted from the display control device, to each of the driving circuits via a bus line and a clock line in the circuit board (col. 7, lines 8-23).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the devices as taught by Yamashita et al. the feature as taught by Asada et al. in order to put in place the a circuit board on which the connecting bus lines and signal lines are accommodate to make the connection between the display control device and associated data, clock and control line drive circuits.

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Regarding claim 4, it being understood that with the means to divide bus lines and clock signal lines (as taught by Yamashita et al., col. 6, lines 18-65 and Fig. 1), the division could be limited to just two lines.

Regarding claims 2 and 5, Yamashita et al. further teaches a said display device wherein the display control device supplies the display data and the clock signal to each of the divided bus lines and clock signal lines in sequence in accordance with transmission timing (col. 6, lines 18-24). It being understood that with the teaching of Yamashita et al. wherein a system computer (display control device) generates all the signals to drive the image display device, said computer would generate the data and clock signals to each of the divided bus lines and clock signal lines in sequence in accordance with transmission timing.

As to claim 8, Yamashita et al. **teaches** said display device wherein the clock signal is a clock signal for latching display data (col. 6, lines 33-37).

4. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. taken with Asada et al. as applied to claim 2 and 5 respectively in item 3 hereinabove, and further in view of Hamilton et al. (USP 4,503,494).

Regarding claims 3 and 6, Yamashita taken with Asada et al. **does not teach** said display device wherein the display control device supplies a signal of fixed voltage level to each of the divided bus lines and clock signal lines to which the display data and the clock signal are not supplied.

Yamashita et al. taken with Asada et al. teaches a display device comprising a display control device which generates the display data and clock signals and associated control signals to facilitate displaying image transmitted to the display control derive from a video signal source mounted on a printed circuit board for driving a system display device.

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Hamilton et al. **teaches** a display control circuit which generates a fixed voltage for application to system bus lines (col. 28, lines 32-67 and col. 29, lines 1-63); Hamilton et al. further **teaches** a control circuit generating a fixed voltage for application to system bus lines wherein a fixed voltage is supplied to a bus line when a data/clock signal is not supplied (col. 29, lines 28-44). It being understood that the system bus lines are brought to a fixed voltage state independent of whether the bus lines are for transmitting data or clock signal.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Yamashita taken with Asada et al. the feature as taught by Hamilton et al. in order to eliminate the condition whereby the voltage on the bus line would be left floating.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. taken with Asada et al. as applied to claim 4 in item 3 hereinabove, and further in view of Chiba et al. (USP 6,380,918).

Regarding claim 7, Yamashita et al. taken with Asada et al. **does not teach** said display device wherein a connector for mounting the display data and the clock signal from the display control device is provided in a lengthwise central portion of the circuit board.

Yamashita et al. taken with Asada et al. teaches a display device comprising a display control device which generates the display data and clock signals and associated control signals to facilitate displaying image transmitted to the display control device from a video signal source mounted on a printed circuit board for driving a system display device.

Chiba et al. **teaches** a display device (col. 2, lines 16-67; col. 4, lines 1-67; col. 5, lines 1-36 and Fig. 1); Chiba et al. further **teaches** a display device wherein a connector for inputting the

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display data and the clock signal from the display control device is provided in a lengthwise central portion of the circuit board (col. 2, lines 12-17 and Fig. 1 item 11). It being understood that the placement of a connector, which could include the central portion of the circuit board, is placed to optimize connection with the system data and clock signals input lines.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Yamashita et al. taken with Asada et al. the feature as taught by Chiba et al. in order to provide a PCB with a connector mounted in the central portion of the circuit board which lends a degree of uniformity to the line lengths of the transmission lines mounted on the board, yielding a uniform time duration of signal transmitted from the said connector to the system logic circuits.

6. Claims 9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. taken with Asada et al. as applied to claim 1 in item 3 hereinabove, and further in view of Chiba et al. (USP 6,380,918).

Relative to claims 9 and 16, Yamashita et al. taken with Asada et al. **does not teach** a connector for inputting the display data and the clock signal from the display control device being provided in a portion other than a lengthwise end portion of the circuit board.

Yamashita et al. taken with Asada et al. teaches a display device comprising a display control device which generates the display data and clock signals and associated control signals to facilitate displaying image transmitted to the display control derive from a video signal source mounted on a printed circuit board for driving a system display device.

Chiba et al. **teaches** a display device (col. 3, lines 16-67; col. 4, lines 1-67 and col. 5, lines 1-36); Chiba et al. further **teaches** a connector for inputting the display data and the clock signal

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from the display control device being provided in a portion other than a lengthwise end portion of the circuit board (col. 2, lines 12-17 and Fig. 1, item 11).

It would have been obvious to a person of ordinary skill in the art at the time of the invention that the placement of the circuit board connector could be placed other than in a lengthwise end portion of the circuit board; or, in a lengthwise central portion of the circuit board which ever configuration would optimize the signal flow to the bus lines, and/or the placement of the connector relative the mating connection.

It would have further been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Yamashita et al. taken with Asada et al. the feature as taught by Chiba et al in order to put in place the means to transmit the display data and the clock signals from the display control device to the display device.

7. Regarding claims 10 and 17, the reasons applied to claim 7 in item 4 hereinabove are applicable to claims 10 and 17 as well.

8. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. taken with Asada et al. as applied to claim 1 in item 3 hereinabove, and further in view of Hamilton et al.

Regarding claims 11, 12 and 15 Yamashita et al. further **teaches** the display control device supplies the display data and clock signals to each of the divided bus lines and clock signal lines in sequence in accordance with transmission timing (col. 6, lines 18-24).

Yamashita et al. taken with Asada et al. **does not teach** said display control device supplies a signal of fixed voltage level to each of the divided bus lines and clock signal lines to which the display data and clock signal lines are not supplied.

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Yamashita et al. taken with Asada et al. teaches a display device comprising a display control device which generates the display data and clock signals and associated control signals to facilitate displaying image transmitted to the display control derive from a video signal source mounted on a printed circuit board for driving a system display device.

Hamilton et al. **teaches** a control circuit generating a fixed voltage for application to system bus lines wherein a fixed voltage is supplied to a bus line when a data/clock signal is not supplied (col. 29, lines 28-44). It being understood that the system bus lines are brought to a fixed voltage state independent of whether the signal transmission lines are for transmitting data or clock signal.

Relative to claims 13-14, Yamashita et al. teaches said display device wherein while the display control device is supplying the display data to one of the bus lines, the display control device supplies signals of fixed voltage level to the other of the bus lines; and while the display control devices is supplying the clock signal to one the clock signal lines, the display control device supplies signals of fixed voltage level to the other of the clock signal lines (col. 6, lines 18-65);

Yamashita taken with Asada **does not teach** the display control device generating a fixed voltage for application to the data lines or clock lines.

Hamilton teaches a control circuit initiating a fixed voltage for application to a signal transmission line (col. 29, lines 28-44).

In a display device, the practice of supplying signals of one voltage to one line of a display matrix while supplying a different voltage to other data or signal lines in the matrix is a common feature of display devices.

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Because this practice is common and well know in the art, it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Yamashita et al. taken with Asada the feature as taught by Hamilton of generating a fixed voltage for application to the date of clock signal lines of the system.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Yamashita taken with Asada et al. the feature as taught by Hamilton et al. in order to eliminate the condition whereby the voltage on the signal transmission line/s would be left floating if a fixed voltage were not established.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

| | | |
|------------------|-----------|-----------------|
| U. S. Patent No. | 6,518,946 | Ode et al. |
| U. S. Patent No. | 6,166,725 | Isami et al. |
| U. S. Patent No. | 6,023,310 | Kawamoto et al. |
| U. S. Patent No. | 4,492,460 | Considine |

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Responses


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E Kovalick whose telephone number is 703 306-3020. The examiner can normally be reached on Monday-Thursday 9:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703 305-4938. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9314 for regular communications and 703 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 306-0377.


Vincent E. Kovalick

February 18, 2004


BIPIN SHALWALA
SUPERVISOR
703 305-4938
703 306-0377